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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10:060,560	01/30/2002	Yongfei Zhu	PARA 50439	8646

27512 7590 12/31/2003  
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EXAMINER
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CLINGER, JAMES C

ART UNIT	PAPER NUMBER
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2821

DATE MAILED: 12/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/060,560

Applicant(s)

ZHU ET AL.

Examiner

Jim Clinger

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claim 7 is objected to because of the following informalities: no antecedent basis for "the substrate" in claim 7. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-8, 10, 13-15 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yandrofski et al.(5,589,845) in view of Coe(4,710,775).

Claim 1, figure 6 of Yandrofski discloses a plurality of radiating elements(41), a feed line assembly(43), and a phase shifter(44) coupled to the feed line assembly(43). Yandrofski does not disclose a slot fed type of radiating element. Figure A6 and 6B of Coe discloses a ground plane(67) positioned between the plurality of radiating elements(70) and the feed line assembly(83), the ground plane(67) having a plurality of pairs of orthogonal openings(75), each pair of orthogonal openings(75) positioned adjacent to one of the radiating elements(70); and the feed line assembly(83) including a plurality of micro strip lines, each of the micro strip lines including a first portion positioned adjacent to one of the pairs of orthogonal openings(75). The radiating

elements disclosed in Coe have an increased bandwidth and symmetric radiated field(abstract).

Claim 2, the openings(75) disclosed in Coe are elongated.

Claim 3, if the elements disclosed in figure 6B of Coe are arranged as disclosed in figure 7 of Coe, a linear micro strip line going down a row or column of figure 7 would be connected with the recited shape and position.

Claim 4, the plurality of radiating elements disclosed in figure 7 of Coe are arranged in a plurality of rows and columns, and the feed line assembly further comprises additional linear micro strip lines and additional pluralities of micro strip lines that extend perpendicularly from the additional linear micro strip lines.

Claim 5, the first portion of each of the plurality of micro strip lines disclosed in figure 6B of Coe includes a 90 degree bend, and the bend is positioned between sections of the first portion that are positioned adjacent to the orthogonal openings(75) in one of the pairs of orthogonal openings.

Claim 6, Yandrofski discloses that the first portion of each of the plurality of micro strip lines has a predetermined length for providing a phase shift between the openings of an adjacent one of the pairs of orthogonal openings(col. 8, lines 44-54), but not specifically a 90 degree phase shift. A 90 degree phase shift is well known in the art and would be an obvious modification of the disclosed device given the specification of Yandrofski.

Claim 7, the phase shifter disclosed in figure 10 of Yandrofski comprises a first substrate(71), a tunable dielectric film(70) positioned on a surface of the first

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substrate(71), a coplanar waveguide(66-69) positioned on a surface of the tunable dielectric film(70) opposite the substrate, an input for coupling a radio frequency signal to the coplanar waveguide and an output for receiving the radio frequency signal from the coplanar waveguide(fig. 11; nos. 85-86 & 94-95), and a connection for applying a control voltage to the tunable dielectric film.

Claim 8, the spacing of the output and input(fig. 11; nos. 85-86 & 94&95) disclosed in Yandrofski comprises a first impedance matching section of the coplanar waveguide coupled to the input; and a second impedance matching section of the coplanar waveguide coupled to the output.

Claim 10, figure 12 of Yandrofski discloses a connection for applying a control voltage to the tunable dielectric film(101) that comprises a first electrode(105) positioned adjacent a first side of a conductive strip(103) of the coplanar waveguide to form a first gap between the first electrode and the conductive strip(103); and a second electrode(104) positioned adjacent a second side of the conductive strip(102) to form a second gap between the second electrode and the conductive strip(102).

Claims 13 and 17-18, Yandrofski discloses a substrate comprising one of MgO, LaAlO<sub>3</sub>, sapphire, Al<sub>2</sub>O<sub>3</sub>, and a ceramic(col. 5, lines 61-62).

Claim 14, the substrates disclosed in Yandrofski(col. 5, lines 61-62) has a dielectric constant of less than 25.

Claims 15 and 19, the tunable dielectric film disclosed in Yandrofski could be manufactured to obtain a dielectric constant as recited.

Claim 20, a conductive housing enclosing the above referenced phase shifter would be an obvious enclosure based on the specification of Yandrofski.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the antenna element disclosed in Coe with the device disclosed in Yandrofski for improved performance as disclosed in Coe.

### ***Double Patenting***

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1- 20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 6,377,217. The difference between the claims of '217 and the recitations of this application is the grouping of the limitations under different claim numbers in the current application.

Claim 1, claims 1, 15 and 19 of '217 recites a plurality of radiating elements, a feed line assembly, and a phase shifter coupled to the feed line assembly, a plurality of

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radiating element, a ground plane positioned between the plurality of radiating elements and the feed line assembly, the ground plane having a plurality of openings, the feed line assembly(83) including a plurality of micro strip lines, each of the micro strip lines including a first portion positioned adjacent to one of the pairs of orthogonal openings(75) in a ground plane.

Claims 2-6, see claims 16 and 19 of '217.

Claim 7, see claim 2 of '217.

Claim 8, see claim 4 of '217.

Claim 9, see claim 5 of '217.

Claim 10, see claim 6 of '217.

Claim 11, see claim 7 of '217.

Claim 12, see claim 8 of '217.

Claim 13, see claim 9 of '217.

Claim 14, see claim 10 of '217.

Claim 15, see claim 11 of '217.

Claim 16, see claim 2 of '217.

Claims 17-18, see claim 3 of '217.

Claim 19, see claim 2 of '217.

Claim 20, see claim 12 of '217.

### ***Correspondence***

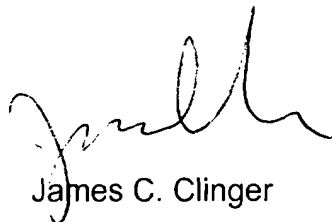
6. Any inquiry concerning this communication or earlier communications from

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the examiner should be directed to Examiner Jim Clinger whose phone number is (703) 305-0619.

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center whose telephone number is (703) 308-0956.

Papers related to Technology Center 2800 applications only may be submitted to Technology Center 2800 by facsimile transmission. Any transmission not to be considered an official response must be clearly marked "DRAFT". The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center Fax Center number is (703) 872-9306.



James C. Clinger